



A weekly question/answer column

With So Much Debate Going On About Fluoride, Will You Answer Some Questions?

Georgia Lauritzen, Deloy Hendricks and Ann Baker answer:*

Fluoride is a natural mineral found in various concentrations in all drinking water and soil. While it is not considered essential for human growth and development, it is beneficial. Fluoride is the only nutrient that reduces the occurrence and prevalence of tooth decay in both children and adults. The use of fluorides and fluoridation is endorsed by many professional health organizations as the most effective dental public health measure in existence.

How does fluoride protect teeth?

- Promotes remineralization of teeth
- Increases resistance to acid decay
- Prevents and inhibits formation of plaque
- Helps permanent teeth in children mature faster
- Improves tooth structure

How did we learn about fluoride?

In the early 1900s, several dentists, particularly in the southwest region of the United States, saw unusual stains or “mottled enamel” on the teeth of many of their patients. These stains, while displeasing to look at, were highly resistant to tooth decay. Researchers discovered that the occurrence and severity of the stained teeth (called dental fluorosis) was associated with high levels of fluoride found naturally in the water supply. Scientists believed that dental decay could be prevented by increasing fluoride amounts in the water supply. Starting in 1945, four community-based trial studies were conducted in areas with low fluoride amounts in the water. Two communities, usually neighboring locations, were paired. One received increased fluoride in their water, the other had no change. These communities were followed for 13-15 years. Water fluoridation resulted in a 50-70 percent reduction in tooth decay. In 1962 recommendations were made in the United States that the optimum range of fluoride concentrations for cavity prevention is between 0.7 and 1.2 ppm (parts per million). The lower range was recommended for warmer climates where water consumption was higher and the higher concentrations for colder climates.

What areas of the world now receive fluoridated water?

In 1984 the World Health Organization (WHO) set a standard maximum concentration of 1.5 ppm fluoride in drinking water to avoid dental fluorosis. Recognizing the benefits of water fluoridation on dental health, many nations responded using the recommended WHO standards as a guide. Hong Kong and Singapore fluoridate all their water supplies. Fluoridated water is provided to more than half of the residents in Australia, Ireland, New Zealand and the United

States. Other countries with large water fluoridation programs include Brazil, Canada, Chile and Malaysia.

In the U.S., approximately 70% of all cities with populations above 100,000 use fluoridated water. Overall, an estimated 62% of the U.S. population had access to fluoridated water in 1992.

Only two percent of the Utah population has access to fluoridated water Brigham City, Helper and Hill Air Force Base have water systems with added fluoride while Delta, Snowville and Milford have naturally high fluoride levels in their water supplies. In Utah, state legislation requires the consent of local voters before any community may initiate fluoridation.

Is water fluoridation safe?

Fluoridation is one of the most thoroughly studied community health issues. The American Dental Association has gathered extensive research on the safety of fluoridation and results showed no increased rate of any chronic disease due to fluoridation. In 1988 the U.S. surgeon general issued a report stating that fluoride levels in drinking water are safe. In 1989 the National Research Council of the National Academy of Sciences, released a report stressing the safety of water fluoridation. Overall, the safety and effectiveness of water fluoridation has been reevaluated frequently with little credible evidence to support an association between fluoridation and any disease conditions. What are other sources of fluoride besides fluoridated water?

While fluoridated water is the most reliable and most effective source of fluoride, supplements, dental products, and even some foods can provide the needed amounts of fluoride to protect dental health.

The prescription of fluoride supplement pills for children is an effective (but less reliable) alternative to water fluoridation.

Topical application sources include fluoride mouth rinses, toothpastes and gels. The concentration of fluoride in all of these products is very high, as they are meant to be used topically only. Danger of excess fluoride is possible if the products are ingested and parents should use caution as young children learn to brush their teeth to teach them not to swallow the toothpaste.

Although most foods contain minimal amounts of fluoride, the primary dietary source is water. Beverages and commercial food products prepared in areas with fluoridated water are also high in fluoride and fish, shellfish, chicken and tea have the highest fluoride levels among all other foods.

What happens if you get too much fluoride?

Excessive fluoride can cause dental fluorosis which is the mottling (discoloration) of tooth enamel that occurs in children as the permanent teeth develop, before they appear. In mild cases, the teeth are highly resistant to tooth decay but may have chalky white patches, usually only detectable during dental exams and as such are not a cosmetic concern. Severe fluorosis causes dark brown stains and can interfere with proper tooth mineralization.

In summary, when fluoride is provided in optimal amounts, provides major dental health benefits to all age groups. Fluoridation of public water supplies has been endorsed by several professional health organizations including the American Dental Association, the American

Dietetic Association, the American Medical Association, and the World Health Organization. In areas that do not have fluoride in their water supply, children should receive fluoride supplements under the direction of their dentist and pediatrician.

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